

Comparing the Effectiveness of Endurance Protocols on the Posterior Rotator Cuff Muscles: Endurance Repetition Weight Training vs. Static Isometric Hold Training

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INTRODUCTION: Posterior shoulder musculature play a crucial role in rehabilitation of shoulder pathology.

PURPOSE: To determine which type of posterior shoulder muscular endurance protocol, endurance repetitions or endurance with static isometric holds, improves muscular endurance more. Poor posterior shoulder endurance can be a precursor to shoulder injury.

METHODS: Healthy participants were divided into three groups; control, repetition training, and an isometric training group. The training groups performed shoulder strengthening exercises 2-3x/week for 10 weeks. Both groups were advised to exercise at level of 4-6 on the Omni-Resistance Scale. Control group didn't exercise. Strength and endurance testing was at baseline, 5, and 10 weeks. Strength was measured via manual muscle testing (MMT) with a handheld digital dynamometer (HDD). Endurance testing included a side-lying external rotation repetitions test and side-lying external rotation (ER) isometric hold. The dominant (DOM) shoulder was used for all strengthening.

RESULTS: No difference was found between DOM and non-dominant (ND) shoulder flexion ($F(10,350)=1.72$, $p=0.075$), abduction ($F(10,350)=1.56$, $p=0.117$), or ER ($F(10,350)=1.22$, $p=0.277$) strength between the three training groups over time. No difference was found between DOM and ND shoulder ER isometric endurance test between groups over time ($F(10,350)=1.04$, $p=0.407$). A difference was found between DOM and ND ER endurance repetition test between groups over time ($F(10,350)=2.69$, $p=0.004$).

CONCLUSION: While each group saw improvements in shoulder strength, neither training groups produced a significant increase in strength compared to the control. However, shoulder ER repetition endurance was improved in both training groups.